Volume 1, Issue 1

Fall/Winter 2008/09

Wild West Weather

National Weather Service Dodge City

Serving You in Southwestern Kansas

by Jennifer Ritterling— Forecaster

Greetings from your National Weather Service (NWS) office in Dodge City! We are one of 122 offices across the country that provide weather and hydrologic forecasts and warnings to the public. As a part of the federal National Oceanic and Atmospheric Administration (NOAA) we are funded by your tax dollars and exist for your weather needs.

Our office launches balloons twice a day to monitor the upper atmosphere, and automated equipment observes weather conditions at the surface. These, along with other data, are fed into supercomputers near Washington D.C. Information from computer models about the future state of the atmosphere is then sent back to our forecasters. Our job is to judge which is the most likely to reflect the true state of the atmosphere and create a forecast for 27 counties in southwestern Kansas. The Dodge City NWS also maintains a continuous weather watch for severe thunderstorms, winter weather, and flooding, as well as hazards such as wind and fog.

Since weather never stops, the forecast office is staffed 24 hours a day, seven days a week. There are 23 employees at the Dodge City NWS office, including 10 forecasters and three hydrometeorological technicians that work around the clock. The staff also includes the Meteorologist-In-Charge, a Science and Operations Officer, a Warning Coordination Meteorologist, a Hydrologist, and an Observing Program Leader. Four people on our Internet Technology and Electronics team and one Administrative Support person round out our staff.

We hope you enjoy the newsletter, and if you have any questions, feel free to contact us via the phone numbers on the back page.

Inside this issue:

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Simplified Winter Weather Warnings and Advisories

by Larry Ruthi—

Meteorologist -In-Charge, National Weather Service Dodge City

Picture of December 2006 ice storm by Mike Umschied, Lead Forecaster

More of Mike's pictures at http://www.underthemeso.com

The National Weather Service began issuing event specific warnings and advisories in 2004 as a result of favorable customer response to a nationwide survey about event specific warnings and advisories. Although the concept of specific warnings and advisories for each type of winter weather (e.g. heavy snow warnings, sleet warnings, etc.) seemed like a good idea at the time, implementation of the practice resulted in a confusing array of warnings and advisories for the same winter weather event. Indeed, a color coded regional map of watch, warning and advisory products during a winter storm contained so many different colors that it was nearly impossible to differentiate between the various watches, warnings and advisories that were in effect.

For the 2008-2009 winter weather season, the National Weather Service will return to the simplified weather advisory concept that was followed several years ago. Advisories for snow, blowing snow and sleet will be combined into more generic winter weather advisories. Warnings for heavy snow and sleet will be combined into winter storm warnings. Separate advisories will be generated for freezing rain and wind chill, and specific warnings for ice storms, dangerous wind chill and blizzards will continue. The nature of each expected winter weather event will be described in the first paragraph of each product, so specific details regarding expected behavior of the atmosphere still will be available.

Warnings and advisories issued by the National Weather Service are reviewed for accuracy and lead time following every winter weather event. Specific criteria are required for verification. For example, winter storm warnings are issued whenever snowfall is expected to exceed six inches in 12 hours or eight inches in 24 hours; sleet is expected to accumulate to a depth of one half inch or more; or ice from freezing rain is expected to accumulate to a depth of a quarter of an inch or more. Winter weather advisories are issued for expected snowfall of two to five inches within a 24 hour period; widespread snowfall with blowing snow restricting visibilities to locally a quarter of a mile or less; sleet accumulations of less than one half inch; or ice accumulation of less than a quarter of an inch from freezing rain or drizzle. These criteria are presented in the table on the back page of this newsletter.

Winter storm warnings and advisories typically are issued up to 36 hours in advance of the onset of winter weather events when confidence is high that warning or advisory criteria will be met. Winter storm watches usually are issued 12 to 48 hours in advance of the onset of winter weather precipitation when there is at least a 50 percent confidence level that conditions meeting warning criteria will be met.

During a winter weather event, NWS Dodge City personnel actively solicit reports to determine what really is going on at the surface. Remote sensing tools are vital to the forecast and warning process, but they never will replace human observers. Much of the information provided in local storm reports is derived from telephone contacts with public officials, trained observers and persons identified through rural directory listings. Radar and satellite imagery are used to identify areas that experienced the most severe winter weather, and persons residing in those areas are contacted during and subsequent to winter storms. Inclusion of reports that each of you provide to us add credibility to our warnings and provide vital decision assistance to persons whose lives and property are affected by severe winter weather.

Winter 2008-09 Outlook for Southwest Kansas

by Ed Berry, Science and Operations Officer and Jeff Hutton, Warning Coordination Meteorologist

The official forecast from the NOAA/NWS Climate Prediction Center (CPC) this upcoming December to February (DJF) period tilt the odds toward warmer and wetter than climatology across southwest Kansas. The seasonal forecasters start with a baseline of 33 percent chance of above normal, near normal, or below normal for temperature and precipitation. This year for the DJF mean outcome, there is about a 10 percent shift into the above normal category for temperatures and a five percent shift for greater than normal precipitation. This translates to a 43 percent chance of above normal temperatures and 38 percent of above average precipitation. The former does not imply periods of excessive cold will not occur. See links for additional information.

http://www.weather.gov/climate/climate_prediction.php?wfo=ddc

http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page2.gif

One consideration that goes into CPC forecasts is the state of El-Nino Southern Oscillation (ENSO). ENSO involves an inter-annual variation of the interaction of the global circulation with sea surface temperatures (SSTs) across the central and eastern equatorial Pacific Ocean. During the winter of 2007-08 these SSTs were much cooler than normal, meaning La-Nina conditions. Responses of the global circulation last winter included a northward shifted storm track. That was one reason why southwest Kansas went into drought by last summer. Air temperatures also tend to be colder than normal across the northern and western part of the country during La-Nina winters. While in the southern and eastern parts of the country, winters are warmer than average during La-Nina years.

CPC currently believes that ENSO "neutral" or La Nina returning are equally likely through early 2009. However, recent atmospheric behaviors tell us at least a weaker version of La-Nina has returned. Thus the odds of anomalous warmth for DJF may be reduced, and a shift toward cold is certainly possible. The shift toward wetness still appears reasonable. In fact, compared to last winter odds do favor greater snowfall for southwest Kansas this upcoming DJF.

Ten Coldest Winters for Dodge City (Dec-Feb)

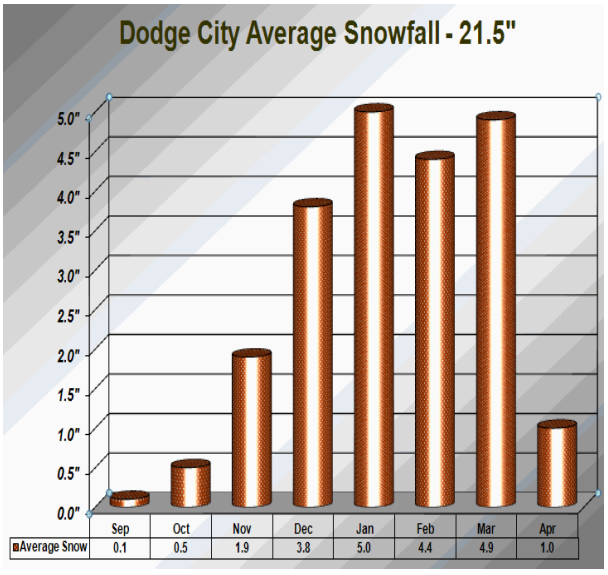
The normal temperature for DJF is 33 degrees

Ending	Avg Temp
1885	22.0°
1881	23.9°
1905	24.7°
1979	24.7°
1912	26.0°
1899	26.3°
1978	26.3°
1993	26.7°
1879	27.0°
1883	27.2°

Ten Warmest Winters for Dodge City (Dec-Feb)

The normal temperature for DJF is 33 degrees

Ending	Avg Temp
1876	40.3°
1992	39.1°
1976	38.5°
1878	37.8°
1931	37.8°
1981	37.7°
1934	37.6°
2000	37.5°
2006	37.4°
1999	37.3°



Average Snowfall by Month

Ten Snowiest Winters for Dodge City (Dec-Feb)

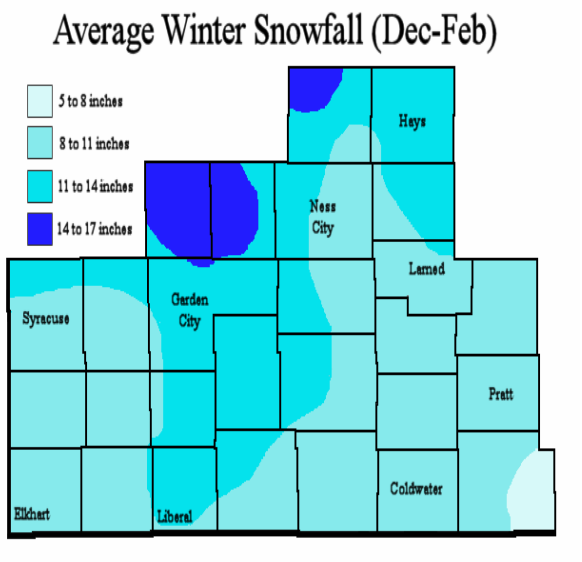
The normal snowfall for DJF is 12.2 inches

Ending	Total Snow
1897	38.4"
1993	38.3"
1912	38.0"
1903	32.6"
1919	31.4"
2001	29.3"
1898	29.2"
1990	28.4"
1895	27.4"
1945	24.8"

Ten Least Snowiest Winters for Dodge City

The normal snowfall for DJF is 12.2 inches

Ending	Total Snow
1992	0.0"
1904	0.1"
1923	0.3"
1970	0.8"
1963	1.4"
1920	1.8"
1933	1.9"
1935	2.0"
1896	2.1"
1888	3.1"



Average snowfall decreases from northwest to southeast across the forecast area.

(Above) Snowiest and least snowiest years for December, January, and February months only.

(Right) Years with greatest and least snowfall totals for the entire cold season.

Snowiest Seasons			Least Snowiest Seasons		
Rank	Amount	Season	Rank	Amount	Season
1	61.1	1992 1993	1	0.2	1903 1904
2	57.5	1911 1912	2	3.0	1932 1933
3	48.5	1918 1919	3	4.0	1922 1923
4	41.6	1894 1895	4	4.0	1892 1893
5	40.6	1947 1948	5	5.3	1895 1896
6	39.8	1896 1897	6	5.4	1949 1950
7	37.9	1997 1998	7	5.7	1962 1963
8	37.3	1923 1924	8	5.9	1934 1935
9	35.6	1979 1980	9	6.1	1991 1992
10	35.1	2000 2001	10	6.4	1954 1955
11	34.0	1902 1903	11	6.9	1993 1994
12	33.9	1921 1922	12	6.9	1945 1946
13	33.1	1959 1960	13	7.5	1919 1920
14	33.0	1982 1983	14	7.7	1888 1889
15	32.5	1890 1891	15	8.1	1967 1968
16	31.7	1897 1898	16	8.3	1920 1921
16	31.7	1998 1999	17	8.4	1961 1962
17	30.9	1968 1969	18	9.1	1960 1961
18	30.5	1986 1987	19	9.1	1885 1886
19	29.9	1944 1945	20	9.3	1953 1954
20	29.6	1948 1949			

TAF Format Changes

by Jeff R. Johnson, Forecaster

For those of you involved in the aviation community, a noticeable format change to Terminal Aerodrome Forecasts (TAFs) occurred at 00Z Coordinated Universal Time (UTC) November 5 (the evening of November 4). This introduced a date/time element to the body of the TAF including change groups for all TAFs provided by the NWS. This was a necessary format adjustment that meets the new service requirements as set forth by the International Civil Aviation Organization (ICAO) which will provide a 30-hour TAF at a few select airports to support flight planning for longer hauls. These sites (which can be found at http://aviationweather.gov/notice/taf30.php) include mainly large commercial airports throughout the United States and Canada.

Even with just a few of these sites affected, the FAA had requested that all TAFs conform to a generic format regardless of the valid period for safety reasons.

Again, all TAFs now include a date/time element. Under the recent format, a customer would see the day and valid period as "250606" which is understood as a TAF being issued on the 25th day at 0600 UTC and being valid for 24 hours until 0600 UTC the following day. After the change, this same period would be shown as "2506/2606". As for each forecast period, the customer knew what to look for when the line started in hours and minutes with no reference to the day. Under the new format change, the day has been added to the times within the line. For instance, a "TEMPO 2022" is now seen as "TEMPO 2520/2522" for the 25th day of the month from 2000 UTC to 2200 UTC. The FM group now makes reference to the day along with the time when the change would start. For example, for the 25th day of the month a "FM1600" would become "FM251600".

Old Format	New Format (Effective 5 November 2008)
TAF	TAF
KABC 131128Z 131212 14005KT P6SM OVC040	KABC 131128Z **1312/1412** 14005KT P6SM OVC040
TEMPO 1216 OVC025	TEMPO **1312/1316** OVC025
FM1600 13015G23KT P6SM OVC015	FM**131600** 13015G23KT P6SM OVC015
FM2100 13015G22KT P6SM OVC008	FM**132100** 13015G22KT P6SM OVC008
TEMPO 2101 1SM -SN	TEMPO **1321/1401** 1SM -SN
FM0100 09015KT 3SM BR OVC006	FM**140100** 09015KT 3SM BR OVC006
TEMPO 0105 2SM -SN BLSN	TEMPO **1401/1405** 2SM -SN BLSN
FM0500 01015KT 5SM BR OVC006=	FM**140500** 01015KT 5SM BR OVC006=

Reminder To Our Observers

Jesse Lee – Observing Program Leader

Those who have the plastic four inch rain gage should take off the top and the inner tube during the winter months. Otherwise, the tube may freeze and break.

An example of a TAF with the old format compared to the new format is seen above. Remember, only a few large airports will use the extra 6 hours in their TAFs. All other 24-hour TAFs will remain unchanged as to their period length but will experience a date/time element change to the TAF format. Further information can be acquired on the NWS AWC web page, www.aviationweather.gov

Community Collaborative Rain Hail and Snow Network *by Jeff Hutton – WCM*

CoCoRaHS— "Because Every Drop Counts"

Have you ever wondered how much rainfall your neighbor received during a precipitation event? Was the amount different from your own measurement? It would not be surprising at all if the amount was different, especially if the rain fell from thunderstorms. Because precipitation can vary considerably from one location to another, the CoCoRaHS program was developed by the Colorado Climate Center in 1998 to combat this problem.

CoCoRaHS is a unique, collaborative partnership designed to provide a **high density** data set of quality measurements of rain, snow and hail. Observers receive training and are equipped with standard four inch diameter rain gauges. The resulting data set has tremendous value for National Weather Service offices. It serves as a supplement to the existing co-op network and allows precipitation patterns to be analyzed with very high resolution. Long term collection of data can and will allow for a better understanding of regional micro-climates.

CoCoRaHS provides a tremendous benefit to the hydrological program as well. With extremely localized rainfall often providing the impetus for flooding and small stream rises, these reports can provide a forecasting tool for such localized events. In addition, the high density data can also be ingested by the River Forecast Centers for use in precipitation summary products and flood forecasting models. Also, with an enhanced focus on drought, the high density network is a powerful tool for drought monitoring and forecasting activities.

By its very nature, the CoCoRaHS project is collaborative. It is a partnership between a multitude of organizations, including governmental, academic, agriculture, and private interests. It has already fostered very strong working relationships between the National Weather Service, the Kansas State Climatologist, county Agriculture Extension Agencies and television stations.

If you are interested in joining the 11,000+ observers residing in over thirty five states, or know of someone that would like to participate, you can go to the CoCoRaHS web site:

www.cocorahs.org

Or you can also contact us at the National Weather Service in Dodge City either by e-mail (jeff.hutton@noaa.gov) or by phone at 620-225-6514 ext. 726.

Meet The Forecaster – Jonathan Finch

Jonathan Finch has been a forecaster at the Dodge City National Weather Service Office for almost 8 years. He grew up in rural southern Virginia and was interested in weather at a very young age. He used to wear out the sliding back door of his house by constantly monitoring for the first snowflake, measuring snow, watching for distant flickers of lightning or checking the temperature. In other words, he has always been a weather nut. He received a BA in environmental science from the University of Virginia in 1991 and a MS in meteorology from Oklahoma University in 1997. Jonathan enjoys forecasting all types of weather including severe storms, extreme cold, and winter precipitation. Aside from forecasting the weather, he maintains a web site devoted to meteorological research at:

http://bangladeshtornadoes.org/

This site contains hundreds of tornado case studies for the United States dating back to the 1930s. Jonathan believes that learning about extreme events in the past is a prime tool to help predict future events that affect southwest Kansas. He uses information gleaned from these old tornado cases to help in office training. In addition to tornadoes in the USA, Jonathan studies and forecasts tornadoes for Bangladesh, in southern Asia, in his spare time and maintains a web site related to severe weather in that part of the world. In addition to forecasting, research and office training, Jonathan gives numerous meteorological presentations at local and regional weather conferences, is involved with career presentations at schools and is occasionally involved in training storm spotters.

One of Jonathan's hobbies is chasing storms. His first storm chase was in 1992 while in graduate school. Storm chasing involves making a prediction of where supercell storms will develop, driving to that general area, and then watching the clouds develop from small cumulus clouds into storms twice as tall as Mount Everest. According to Jonathan, storm chasing is a great way to acquire knowledge about weather. He believes one can learn things from watching the sky that can't be well understood by simply attending a class.

Fire Weather Products From NWS Dodge City *by Matt Gerard, Lead Forecaster*

The National Weather Service in Dodge City expanded its Fire Weather program on October 1, 2006 to include the issuance of Fire Weather Watches and Red Flag Warnings as well as the Fire Weather Forecast. In January of 2008, the Rangeland Fire Danger Index, which provided advisory information on rangeland and/or grassland fire potential or conditions, was discontinued for southwest Kansas in favor of the more detailed Red Flag Warning.

The Fire Weather Forecast is issued once a day by 5 am CST. This forecast contains a brief discussion about expected weather conditions through the next few days. It also contains a tabular forecast of various meteorological parameters including mixing height, transport wind, smoke dispersal, lightning activity level and the Haines Index. In addition, there is an extended forecast out to day seven. For current fire weather products, please see:

http://www.crh.noaa.gov/ddc/?n=firewx

Fire Weather Watches and Red Flag Warnings are issued when the combination of dry fuels and weather conditions support extreme fire danger and/or fire behavior.

The criteria for Fire Weather Watches and Red Flag Warnings in southwest Kansas include the following:

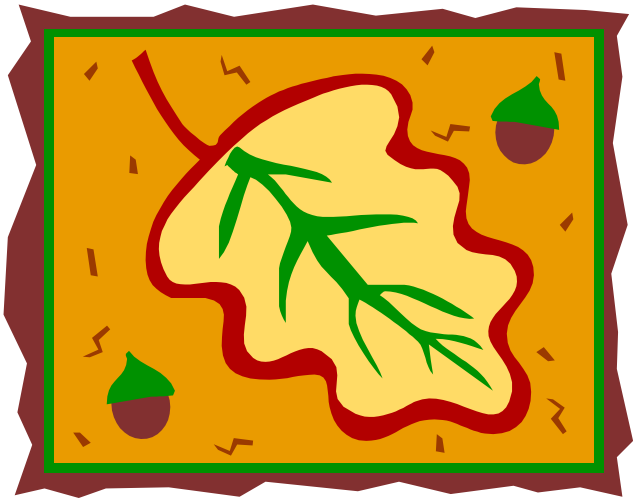
- Fuel characteristics are favorable for large fire growth.
- Relative Humidity is less than or equal to 15 % and sustained winds or frequent gusts are greater than or equal to 25 mph.
- Dry Thunderstorms with greater than 15 % coverage are expected.

These conditions need to be met for at least three hours.

Spot forecasts are site specific forecasts that are issued on an "as needed" basis in support of wildfire suppression and natural resource management. Spot forecasts may also be issued for hazardous materials incidents and other threats to public safety.

Q G B E O D A N R O T C N P J L
A T X J C S E K V Q B X W J G K
V P L H I B C J N M R M Z C I J
G R A U P E L O R F Z R L A F O
U W Q R B D Y T E E L S P B R S
B N K I C E S T O R M Q L H E P
S I T L R T A Y D S P I J F E I
W D M B H W I D N O Z O G K Z N
E J K Q O U E C E Z P N L Z I Q
Z R C N S H A M A Y T C X Y N L
V E S V G E F R F I U C J D G T
A T G F O X D W E V R I X L R U
X N K Y F R O S T H W M U P A M
G I Z V H T D L L I H C D N I W
T W U Q G F S O I N B R W A N R
S P R I N G Q B P W X Y R C H J
G V P Q T W M Z H L C O Y Z X H
D E C W M T X A K V D Y U Z X W
S Z A L X P I W I Z P I K H B V
Y C P J N L U K L T S Q D N I W

Can you find the weather terms in the puzzle?



Words to find:

Blizzard	Snow	Sleet	Freezing rain
Ice storm	Frost	Winter	Wind Chill
Arctic Air	Graupel	Spring	Tornado
Hail	Wind		

by Jamie Bielinski, former Lead Forecaster, now Warning Coordination Meteorologist in Grand Rapids, MI.

National Weather Service
Dodge City

104 Airport Rd.
Dodge City, KS 67801

Phone: 620-225-6514
Recorded Forecast 620-227-3311
Fax: 620-227-2288
http://www.weather.gov/ddc

"NOAA's National Weather Service provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community."

Road Conditions:

Dial 511 or http://511.ksdot.org

Table of Simplified Winter Warning/Advisory Criteria

WARNING & ADVISORY CRITERIA			
WFO (DDC)			
Warning Type	Warning Criteria	Advisory Type	Advisory Criteria
Blizzard	Sustained wind or frequent gusts greater than or equal to 35 mph and visibility of a quarter mile or less in snow and/or blowing snow for at least three hours.	Winter Weather Advisory for Blowing Snow	Widespread Blowing Snow reducing visibility locally to a quarter mile or less.
		Freezing Fog	Light ice deposition from freezing fog.
Winter Storm Warning for Heavy Snow	6 inches or more in 12 hrs or 8 inches or more in 24 hours.	Winter Weather Advisory for Snow	Two to five inches of snowfall in 12 to 24 hours.
Ice Storm	Ice accumulation of a quarter inch or more.	Freezing Rain	Ice accumulation from freezing rain or freezing drizzle of less than a quarter of an inch.
Winter Storm Warning for Sleet	Sleet accumulation of one half inch or more.	Winter Weather Advisory for Sleet	Sleet accumulation of less than half an inch.
		Winter Weather Advisory for Snow and Blowing Snow	Widespread snowfall and blowing snow restricting visibilities to locally a quarter of a mile or less.
Wind Chill	Wind chill index of -25 or less for three or more hours accompanied by a sustained wind of at least 10 miles per hour.	Wind Chill	Wind chill index of -15 or lower for three or more hours accompanied by a sustained wind of at least 10 miles per hour.